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DATA MINING TECHNIQUES USED FOR DESCISION MAKING IN PRESISION AGRICUTURE FARMING

Ruthwik R Soudry, SET- Jain University, Bengaluru, Karnataka

Sharanpreet Singh,SET- Jain University, Bengaluru, Karnataka

Sahana shetty, SET- Jain University, Bengaluru, Karnataka

C R Manjunath, SET- Jain University, Bengaluru, Karnataka

Abstract

Data mining is the practice of examining large pre-existing datasets in order to generate new insights. Data mining finds its application in various fields like automobile, medicine, finance, agriculture etc. Application of Data mining in agriculture has its wide range of advantages like analyzing various factor that affect the crops. Agriculture plays a predominant role in the growth of Indian economy. the common problem faced by Indian farmers are they don't choose the right crop based of parameters like soil condition, PH value, average temperature and consumption of water. Due to this there is lack of productivity and quality of crops. This issue is addressed to farmers by recording data of various factors and calculating the right crop for cultivation for increased productivity. This paper we propose a recommendation model for better decision making using k means, k-nearest neighbor, support vector machine, unsupervised clustering.

1. INTRODUCTION

In the late research world, Data mining is an extremely critical space to study. The strategies are helpful to extract critical and perfect information which can be comprehended by numerous people.

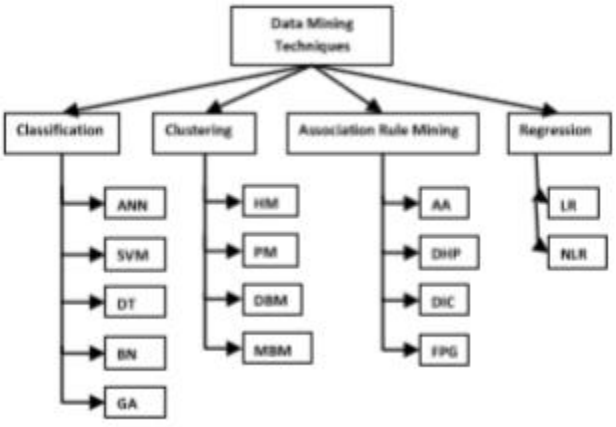

Fig.1.Data Mining Stratergies

The fundamental systems for information mining incorporate Classification, Clustering, Association standards and Regression. The distinctive data mining strategies utilized for taking care of various

agricultural issue. Classification and prediction are two critical types of information examination that can be utilized to remove models depicting vital information classes or to foresee future information patterns. It is a procedure in which a model figures out how to foresee a class mark from an arrangement of preparing information which would then be able to be utilized to anticipate discrete class names on new examples. To amplify the prescient precision got by the arrangement show while ordering cases in the test set concealed amid preparing is one of the real objectives of grouping calculation. Regression is learning a function that maps a data item to a real-valued prediction variable. The different applications of regression are predicting the amount of fossil remaining in the earth, estimating the probability of patient will survive or not on the set of his diagnostic tests, predicting the market for the consumers demand on specific product. Here the model is trained to predict a continuous target. Regression tasks are often treated as classification tasks with quantitative class labels. The methods for prediction are Linear Regression and Nonlinear Regression.

2. PROBLEM DEFINITION AND OBJECTIVE

Cultivation or agribusiness is the foundation of the Indian economy, as two-thirds of the occupants live in rural areas and are dependent (specifically or in a roundabout way) on cultivation as a profession. The farming communities in India are facing multiple problems to increase their agriculture productivity. In spite of fruitful researches on new farming practices regarding crop cultivation, a majority of the farmers are not getting high and ensured yield because of various reasons.

Fig.2.Slash and burn

Farmers follow the traditional methods like slash and burn and mulching that reduces the quality of soil. Mulch decreases the heating of the soil by the sun. In Summer this isn't an issue yet but in early/mid Spring when you need all the warmth you can get from the sun's rays it can inhibit the germination of seeds, especially those seeds that need a higher soil temperature to germinate. Lower soil temperature can similarly decrease the advancement rate of seedling. The issues of worldwide nourishment security and the ecological punishments of increasing production of food to the required statures are an important international worry. The developing human population over the past time has been directly related to a

growth in food production. For the most part, creation has expanded marginally quicker than population. Additionally, environmental change will cause moves in zones fitting for cultivating of a broad scope of yields. We have endeavored to introduce an answer for this issue. Effective methods can be produced and carefully fit for explaining multifaceted soil data sets utilizing data mining strategy to enhance the efficiency and correctness of the classification of large data sets.

3. BACKGROUND WORK

Two focuses are extremely important for the harvest to be developed that can be chosen primarily based on market and benefit. Be that as it may, up till now this is acquired or conventional strategy utilized which are not 100 percent assured effectiveness. In any zone, the principle editing frameworks are the consolidated consequences of at various times conclusions by people, groups or governments, and their activities. These conclusions are typically based on predictable profit, tradition, personal first choice, practice, and resources, communal and political pressure, etc. There is a considerable measure of decent variety in crops in India. In north India, there are two seasons, kharif, it's term is July to October, and rabi whose length is October to March. Yields created amongst March and June are called as zaid. Would you be able to make a think about why India has a decent variety in crops? India has scope of geology, atmosphere and soil. Since India has tropical and additionally direct atmosphere, yields of both the atmospheres are found in India. There are exceptionally uncommon nations on the planet that have changeability when contrasted with that of India. The major noteworthy highlights of Indian horticulture are feasible cultivating, which is exceptionally reliant on rainstorm and creatures, variety in yields and power of sustenance crops. Precision Farming field differences are checked, put away for administration and maintaining of the important assets utilizing innovations to accomplish and increment development or deliver. This can be the mechanical assembly on account of agriculturalists for selecting crop, management with objective of refining return on investments

4. RELATED WORK

Agriculture refers to a sequence of agrarian processes which involve several day-to-day doings on the field, for e.g. sowing, fertilizing, weeding and making all the decisions related to agriculture. Farming activities focus on how to apply fertilizers, grow plants, identify and correct plant diseases, kill weeds/pests and estimate the growth or the yield of crops Current advances being developed for Android application and an expanding accessibility of Android mobile phones taken into account specific agrarian burdens to be picked up and has to be co-ordinated. For e.g, agriculturists may compute legitimate amounts of composts for crop production after looking at the shade of product leaves with some advantage from Android applications. The following are the subcategories of smartphone applications for farming: Crop disease detection and diagnosis, Fertilizer Calculator, Study of soil, Study of water. Applications on Extensive administrations: In a few nations around the world, cultivating is the main driver of the economy, however, farmers are yet poor and under taught. Governments convey horticultural expansion lead as an administration that spreads out to agriculturists to offer assistance, for e.g., showing farmers of new harvests, helping agriculturists distinguish diseases of the crop, and record-keeping homesteads to convey appropriation to zones influenced by calamity.

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5. DATA MINING TECHNIQUES

NNs give a procedure to delineate engineered neurons to determine complex glitches similarly as the human cerebrum does. A subscription framework permits customized material. Foundation of the data is gathered from different sources, dealt with by decision support models, and the outcomes are joined into customized pages with embedded graphics, skilled clarifications and links to extra data. There are numerous obliges like temperature, accessibility of water, types of soil, soil Ph level to deal and coordinate with the most matching crops to harvests. In this way, we have shaped one discrete unique class to and it out that is Neural.java. We have taken contributions from the client and register all qualities at backend and show coordinating harvest. The Android Application will have two principle modules for administrator and agriculturists individually. The administrator and the farmer will have the permissions for accessing the content accordingly.

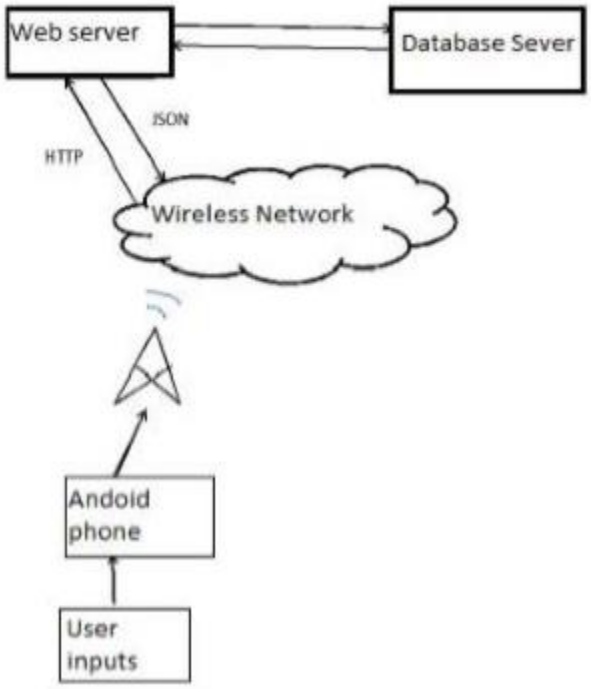

Fig.3.Architecture

There are number of studies which have been completed on the utilization of data mining systems for farming data sets. Naive Bayes Data Mining Technique is utilized to group soils that examine expansive soil profile experimental datasets. Decision tree calculation in data mining is utilized for foreseeing soil fertility. By utilizing clustering techniques creator looks at the present utilization and subtle elements of horticulture that vanished in the past seven years. The general point of the examination was to decide the land use for farming and non-agribusiness zones for as long as ten years. D Ramesh utilized k-implies way to deal with gauge the harvest yield examination. A few data mining approach which are utilized as a part of horticultural space are audited by creator Vamanan, R, and Ramar, K in his paper appeared in table and the result of his examination is soil order utilizing Naïve Bayes classifier.

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CONCLUSION

There is a need of distinguishing best coordinating products in cultivating. The customary methods for cultivating can't enable farmers to accomplish the required yield. In this way, a digitized strategy or framework ought to be created to enable agriculturist to expand the yield of their farm. As India is an Agrarian nation. This framework will give a summed-up answer for the vast majority of the issues in cultivating identified with development of yields. The primary reason for growing such framework is to enable ranchers to build the efficiency of their fields and to expand the total national output and lessen the poverty in India.

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